HAWAIIAN SUGAR MANUAL

1983

Hawaiian Sugar Planters' Association

HSPA
SUGAR MANUAL 1983

A Handbook of Statistical Information
PUBLISHED BY

Hawaiian Sugar Planters' Association
99-193 Aiea Heights Drive
P. O. Box 1057
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Published August 15, 1983.

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HAWAII'S SUGAR INDUSTRY

U.S. AND WORLD SUGAR INDUSTRY

MISCELLANEOUS

HAWAIIAN SUGAR COMPANIES

(Listed according to principal owners)

ALEXANDER & BALDWIN, INC.

HAWAIIAN COMMERCIAL & SUGAR COMPANY
R. F. Cameron, Gen. Mgr.
Puunene, Hawaii 96784
Phone: 877-0081

McBRYDE SUGAR COMPANY, LTD.
D. P. Scott, Vice Pres. & Gen. Mgr.
Eleele, Hawaii 96747
Phone: 335-5333

AMFAC, INC.

KEKAHA SUGAR COMPANY, LTD.
L. A. Faye, Jr., Pres. & Mgr.
Kekaha, Hawaii 96752
Phone: 337-1472

THE LIHUE PLANTATION COMPANY, LTD.
J. C. Hance, Pres. & Mgr.
Lihue, Hawaii 96766
Phone: 245-2112

OAHU SUGAR COMPANY, LTD.
W. D. Balfour, Jr., Pres. & Mgr.
Waipahu, Hawaii 96791
Phone: 677-3577

PIONEER MILL COMPANY, LTD.
R. T. Vorfeld, Pres. & Mgr.
Lahaina, Hawaii 96761
Phone: 661-0592

PUNA SUGAR COMPANY, LTD.
Hiroshi Kawazoe, Pres. & Mgr.
Keaau, Hawaii 96749
Phone: 966-9242

C. BREWER & COMPANY, LTD.

HILO COAST PROCESSING COMPANY[a]
W. B. Case, President & Chief Exec. Off.
Pepeekeo, Hawaii 96783
Phone: 963-5516; 963-6669

KA'U SUGAR COMPANY, LTD.
I. W. Bowman, Vice Pres. & Mgr.
Pahala, Hawaii 96777
Phone: 928-8311

MAUNA KEA SUGAR COMPANY, INC.[b]
J. A. Sasan, Vice Pres. & Mgr.
Papaikou, Hawaii 96781
Phone: 964-1025

C. BREWER & COMPANY, LTD. (CONT'D.)

OLOKELE SUGAR COMPANY, LTD.
R. B. Cushnie, Vice Pres. & Mgr.
Kaumakani, Hawaii 96747
Phone: 335-5337

WAILUKU SUGAR COMPANY[c]
D. B. Cataluna, Vice Pres. & Mgr.
Wailuku, Hawaii 96793
Phone: 244-7079

CASTLE & COOKE, INC.

WAIALUA SUGAR COMPANY, INC.
W. W. Paty, Jr., Pres. & Gen. Mgr.
Waialua, Hawaii 96791
Phone: 637-4520

THEO. H. DAVIES & COMPANY, LTD.

THEODAVIES HAMAKUA SUGAR COMPANY
F. S. Morgan, President
Paauilo, Hawaii 96776
Phone: 776-1511

GAY & ROBINSON, INC.[d]

W. S. Robinson, Pres.
Makaweli, Hawaii 96769
Phone: 338-8233

[a] Sugarcane milling company cooperatively owned by United Cane Planters' Cooperative and Mauna Kea Sugar Co.

[b] Mauna Kea Sugar Company is a grower which delivers its cane to Hilo Coast Processing Co.

[c] Wailuku Sugar Company is a grower whose cane is milled by Hawaiian Commercial & Sugar Co.

[d] Gay & Robinson, Inc. is a grower whose cane is milled by Olokele Sugar Company.

HAWAIIAN SUGAR COMPANIES BY ISLANDS, WITH ACREAGE AND PRODUCTION FOR 1982
(Raw Value)

	Total Caneland Acreage	Acreage Harvested	Production (short tons)	Tons Sugar Per Harvested Acre
ALEXANDER & BALDWIN, INC. (A&B)				
Hawaiian Commercial & Sugar Co.	35,742	13,653	166,001	12.16
McBryde Sugar Co., Ltd.	12,893	6,363	54,384	8.55
TOTAL A&B	48,635	20,016	220,385	10.36
AMFAC, INC. (Amfac)				
Kekaha Sugar Co., Ltd.	8,263	3,223	47,217	14.65
The Lihue Plantation Co.	16,297	7,698	68,510	8.90
Oahu Sugar Co., Ltd.	15,563	7,810	93,217	11.94
Pioneer Mill Co., Ltd.	8,251	3,664	44,943	12.28
Puna Sugar Co., Ltd.	9,976	5,684	57,273	10.08
TOTAL AMFAC	58,350	28,079	311,160	11.57
C. BREWER & CO., LTD. (Brewer)				
Ka'u Sugar Co., Ltd.	15,659	4,695	54,508	11.62
Mauna Kea Sugar Co., Ltd. (Grower only)	20,462	8,149	92,578[a]	11.36
Olokele Sugar Co., Ltd.	4,814	2,328	30,144	12.94
Wailuku Sugar Co. (Grower only)	3,530	1,914	23,704[b]	12.39
TOTAL BREWER	44,465	17,086	200,934	12.08
CASTLE & COOKE, INC. (C&C)				
Waialua Sugar Co., Inc.	13,594	6,287	68,851	10.95
THEO H. DAVIES & CO., LTD. (Davies)				
TheoDavies Hamakua Sugar Co.	35,193	14,509	144,425	9.95
GAY & ROBINSON, INC. (G&R)				
(Grower only)	2,630	1,255	16,856[c]	13.43
HILO COAST PROCESSING CO. (HCPC)				
(Processor only)			[d]	
UNITED CANE PLANTERS' COOP (UCPC)				
(180-member Grower only)	1,882	2,029	20,302[e]	10.01
TOTAL ALL COMPANIES	204,749	89,261	982,913	11.01

[a] Grower only; sugarcane processed by Hilo Coast Processing Co.

[b] Grower only; sugarcane processed by HC&S.

[c] Grower only; sugarcane processed by Olokele Sugar Co.

[d] Processor only; 92,578 tons attributed to Mauna Kea Sugar Co., 20,302 tons attributed to United Cane Planters' Coop.

[e] Grower only; sugarcane processed by Hilo Coast Processing Co.

CANE SUGAR: PRODUCTION IN HAWAII

Calendar year[a]	Tons sugar per acre	Tons cane per ton sugar	Total cane land area	CANE USED FOR SUGAR: Acreage harvested[b]	CANE USED FOR SUGAR: Average yield per acre	CANE USED FOR SUGAR: Production	SUGAR PRODUCED: Converted to 96° raw value[c]	SUGAR PRODUCED: Equivalent refined[d]	Raw Value 96° sugar made per short tons of cane	Molasses production
			Acres	Acres	Short Tons	Short Tons	Short Tons	Short Tons	Pounds	Coml. Tons
1908-1909. . .	5.14	7.42	201,641	106,127	38.2	4,050,000	545,738	510,048	270	
1909-1910. . .	4.81	7.78	209,469	110,247	37.4	4,122,000	529,940	495,282	257	
1910-1911. . .	5.16	7.94	214,312	112,796	41.0	4,623,000	582,196	544,120	252	
1911-1912. . .	5.34	7.75	216,345	113,866	41.4	4,711,000	607,863	568,109	258	
1912-1913. . .	4.90	7.99	215,741	113,548	39.1	4,445,000	556,654	520,249	250	
1913-1914. . .	5.54	8.01	217,470	112,700	44.4	5,000,000	624,165	583,345	250	
1914-1915. . .	5.75	7.96	239,800	113,164	45.8	5,184,393	650,970	608,397	251	
1915-1916. . .	5.17	8.14	246,332	115,419	42.1	4,859,424	596,703	557,679	246	
1916-1917. . .	5.57	7.98	247,476	117,468	44.4	5,220,000	654,388	611,591	251	
1917-1918. . .	4.86	8.34	246,813	119,785	40.5	4,855,804	582,192	544,117	240	
1918-1919. . .	5.07	7.81	239,844	119,679	39.6	4,744,070	607,174	567,465	256	
1919-1920. . .	4.91	7.98	247,838	114,105	39.2	4,473,498	560,379	523,730	251	
1920-1921. . .	4.83	8.53	236,510	113,056	41.2	4,657,222	546,273	510,547	235	
1921-1922. . .	4.98	8.23	228,519	124,124	41.0	5,088,062	618,457	578,010	243	
1922-1923. . .	4.85	8.23	235,134	114,182	39.9	4,559,819	554,199	517,954	243	
1923-1924. . .	6.42	7.91	231,862	111,581	50.7	5,661,000	715,918	669,097	253	
1924-1925. . .	6.47	8.06	240,597	120,632	52.2	6,297,000	781,000	730,000	248	
1925-1926. . .	6.58	8.07	237,774	122,309	53.1	6,495,686	804,644	752,020	248	
1926-1927. . .	6.68	8.41	234,809	124,542	56.1	6,992,082	831,648	777,258	238	
1927-1928. . .	7.00	8.37	240,769	131,534	58.6	7,707,330	920,887	860,661	239	
1928-1929. . .	7.16	8.05	239,858	129,131	57.7	7,447,494	925,140	864,636	248	
1929-1930. . .	7.02	8.36	242,761	133,840	58.7	7,853,439	939,287	877,858	239	
1930-1931. . .	7.43	8.33	251,533	137,037	61.9	8,485,183	1,018,047	951,467	240	
1931-1932. . .	7.57	8.38	251,876	139,744	63.4	8,865,323	1,057,303	988,155	239	
1932-1933. . .	7.34	8.05	254,563	144,959	59.1	8,566,781	1,063,605	994,045	248	
1933 (Oct. 1-Dec. 31). . .	----	----	-------	-------	----	---------	127,317	118,990	---	
1934	7.14	8.33	252,237	134,318	59.5	7,992,260	959,337	896,596	240	
1935	7.82	8.67	246,491	126,116	67.8	8,555,424	986,849	922,309	231	
1936	7.97	8.80	245,891	130,828	70.1	9,170,279	1,042,316	974,149	227	
1937	7.46	9.32	240,833	126,671	69.5	8,802,716	944,382	882,619	215	
1938	6.92	9.39	238,302	135,978	65.0	8,835,370	941,293	879,732	213	
1939	7.18	8.66	235,227	138,440	62.2	8,609,543	994,173	929,154	231	
1940	7.16	8.76	235,110	136,417	62.7	8,557,216	976,677	912,802	228	
1941	7.24	9.04	238,111	130,768	65.5	8,559,797	947,190	885,244	221	
1942	7.58	9.10	225,199	114,745	69.0	7,918,342	870,099	813,195	220	
1943	7.79	9.24	220,928	113,754	71.9	8,185,400	885,640	827,719	216	
1944	7.99	8.95	216,072	109,522	71.5	7,832,185	874,947	817,725	223	
1945	7.96	8.98	211,331	103,173	71.4	7,371,158	821,216	767,509	223	
1946	8.06	8.83	208,376	84,379	71.1	6,002,127	680,073	635,596	227	212,230
1947	7.72	9.11	211,624	113,020	70.3	7,942,216	872,187	815,146	220	285,190
1948	8.35	9.03	206,550	100,042	75.4	7,542,613	835,107	780,491	221	254,740
1949	8.76	8.44	213,354	108,794	73.9	8,045,941	955,890[e]	893,375	238	251,500
1950	8.78	8.51	220,383	109,405	74.7	8,174,821	960,961[f]	898,114	235	259,130
1951	9.09	8.51	221,212	109,494	77.4	8,477,201	955,759	930,636	235	270,585
1952	9.44	8.52	221,990	108,089	80.4	8,693,920	1,020,450	953,712	235	259,360
1953	10.15	8.19	221,542	108,337	83.1	9,003,967	1,099,316	1,027,421	244	287,480
1954	10.02	8.75	220,138	107,480	87.75	9,431,781	1,077,347	1,006,889	228	306,910
1955	10.74	8.66	218,819	106,180	92.94	9,867,978	1,140,112	1,065,525	231	295,550
1956	10.28	9.01	220,606	106,956	92.65	9,909,990	1,099,543	1,027,633	222	305,580
1957	10.16	8.71	221,336	106,742	88.51	9,447,647	1,084,646	1,013,710	230	303,700
1958	9.09	9.87	221,683	84,136	89.77	7,552,750	764,953	714,925	203	307,210
1959	8.83	9.66	222,588	110,371	85.31	9,416,225	974,632	910,891	207	330,790
1960	9.03	9.20	224,617	103,584	83.15	8,613,317	935,744	874,546	217	299,590
1961	10.09	8.78	227,027	108,320	88.58	9,595,342	1,092,481	1,021,033	228	329,960
1962	10.31	8.76	228,926	108,600	90.36	9,812,580	1,120,011	1,046,762	228	335,510
1963	10.25	9.12	231,321	107,436	93.39	10,033,969	1,100,768	1,028,777	219	322,610
1964	10.64	8.90	233,145	110,759	94.76	10,495,175	1,178,770	1,101,678	225	336,250
1965	11.11	8.82	235,576	109,600	97.97	10,737,507	1,217,667	1,138,033	227	340,190
1966	11.12	8.89	237,499	111,005	98.82	10,969,925	1,234,121	1,153,409	225	349,540
1967	10.65	9.27	239,813	111,837	98.74	11,045,949	1,191,042	1,113,148	216	359,170
1968	10.85	9.15	242,476	113,525	99.36	11,279,920	1,232,182	1,151,597	218	368,050
1969	10.44	9.17	242,216	113,232	95.73	10,839,272	1,182,414	1,105,060	218	340,330
1970	10.21	9.00	238,997	113,816	91.88	10,457,377	1,162,071	1,086,000	222	322,480
1971	10.62	8.69	232,278	115,810	92.26	10,685,019	1,229,976	1,149,510	230	330,227
1972	10.32	8.87	229,611	108,456	91.55	9,929,068	1,118,883	1,045,708	225	307,543
1973	10.43	8.55	226,580	108,189	89.15	9,645,452	1,128,529	1,054,723	234	301,500
1974	10.86	8.73	224,227	95,826	94.76	9,082,684	1,040,742	972,677	229	293,380
1975	10.53	8.57	221,426	105,125	90.23	9,485,299	1,107,199	1,034,788	233	301,335
1976	10.51	8.73	221,551	99,926	91.79	9,172,649	1,050,457	981,757	229	275,352
1977	10.68	8.70	220,729	96,770	92.95	8,994,388	1,033,739	966,132	230	284,349
1978	10.36	9.00	220,697	99,355	93.23	9,263,190	1,028,933	961,641	222	310,238
1979	10.53	9.09	218,773	100,610	95.74	9,632,135	1,059,737	990,430	220	325,843
1980	10.51	9.00	217,718	97,358	94.64	9,214,136	1,023,232	956,313	222	315,088
1981	10.74	8.43	216,099	97,573	90.51	8,831,477	1,047,541	979,032	237	311,719
1982	11.01	8.96	204,749	89,261	98.68	8,807,998	982,913	918,610	224	273,780

[a] Until 1934 represented period Oct. 1 through Sept. 30.

[b] The average growth of a crop is from 22 to 24 months. Only a portion of the total acreage in cane is harvested each year.

[c] Converted in accordance with Sugar Regulations, Series 1, No. 1, U. S. Department of Agriculture, Agricultural Adjustment Administration, issued February 18, 1935, or Section 101(h) of the Sugar Act of 1948 or corresponding provisions of its predecessors as the case may be.

[d] 1 ton of sugar, 96° test is assumed to be equivalent to 0.9346 tons of refined.

[e] Includes 2,369 tons raw sugar produced from volunteer cane for which no acreage shown.

[f] Includes 2,690 tons raw value sugar produced from volunteer cane for which no acreage shown.

SUGAR IN HAWAII'S ECONOMY

The year of 1982 was an improvement over 1981 for Hawaii's sugar producers. Estimated losses in 1981 totaled $90 million (as revised) and it was feared that results for 1982 might be equally disastrous.

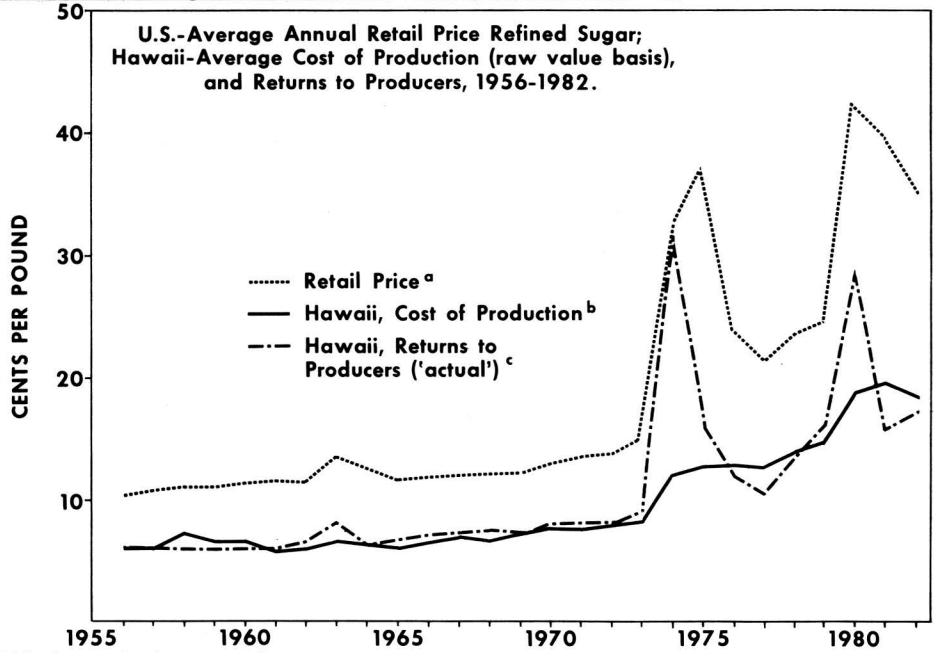
Several things, however, resulted in an improvement so that only an estimated $1.5 million total was lost by Hawaiian sugar producers in 1982.

For one thing, extraordinary measures were taken to reduce production costs. Short periods of unpaid furloughs were used in some instances, replacement of equipment was deferred, capital improvement programs were deferred, and the International Longshoremen's and Warehousemen's Union, which represents sugar employees, deferred half of a scheduled wage increase for six months. All cost-cutting efforts combined resulted in cost reduction of approximately $30 million in 1982 compared to 1981.

Another improvement was in the price received by Hawaiian producers for 1982's crop. Late in 1981, the U.S. Congress included a sugar program in the Agriculture and Food Act of 1981. Under this legislation, the Department of Agriculture established a market stabilization price for sugar, but even the duties and import fees imposed under existing law did not result in the price of sugar approaching the market stabilization price. Therefore, on May 11, 1982, the President, under statutory authority, imposed quotas on imports of foreign sugar. These actions did result in the U.S. sugar price approaching the market stabilization target and did result in higher returns to producers.

In Hawaii, revenues from sale of electricity generated in the raw sugar factories increased nearly 50%, not so much because of higher prices but because of increased efforts to improve the efficiency with which bagasse produced in the milling process can be burned to generate electricity.

Prices of sugar and returns to domestic producers have fluctuated wildly in the eight years since the expiration of the U.S. Sugar Act, and were stabilized only by the steps by the Federal Government in 1981 and 1982. Sugar prices were high in 1974, declined drastically in 1975, 1976, and 1977 and then climbed to another high in 1980, followed by a precipitous drop (see graph at the bottom of this page). In the years 1976 through 1982 sugar producers in Hawaii experienced losses in all but two years, 1979 and 1980. Even though revenues from sale of



[a] U.S. price granulated sugar at retail.
Sources: 1956-1976, USDA Agricultural Statistics.
1977-1981, USDA Sugar and Sweetener Report, May 1982.
1982- USDA Sugar and Sweetener Report, June 1983.

[b] Hawaii cost of production is weighted average annual cost of producers who grow and mill sugarcane. Source: HSPA. (Note: From 1956-1971, cost of transportation of raw sugar and molasses was paid by the producers; 1972-1981 by C and H. Thus, since 1972, costs have been slightly lower than they would have been without the change, but returns have been reduced by the same amount.)

[c] Returns to Hawaii producers represents sales of sugar and molasses by C and H. Does not include compliance payments made under the U.S. Sugar Act which terminated in 1974. Such payments averaged less than 1/2 cent per pound. Does not include payments under the 1977 U.S. program which amounted to 2-3/4 cents per pound for one crop only. Source: HSPA.

sugar and molasses are important to the economy of the State of Hawaii, and the electrical energy supplied by sugar producers helps reduce the need for imported oil, sugar production cannot survive continued losses. Sugarcane and pineapple production are not the dominant economic bases in Hawaii they used to be, but are still important sources of income to the State, representing about 75% of all income from sale of agricultural products.

In recent years, the visitor industry has become the most important economic base for Hawaii. From a very small business following World War II, tourism grew rapidly after Hawaii became a state in 1959 and the almost simultaneous introduction of the jet aircraft. In 1982 the Hawaiian economy realized an estimated $3.7 billion from visitor spending.

The second most important source of income is federal defense expenditures, which totaled $1.82 billion in 1982.

The value of all agricultural products in 1982 was $735 million. Returns from the sale of sugar and molasses accounted for $347 million of this total, pineapple for $206 million, and other agricultural products the remaining $182 million.

The State of Hawaii imports most of its essentials -- food, building materials, fuel, and clothing -- so income from "export" products is necessary in the State's balance of trade.

A SMALLER SUGAR MANUAL

To reduce costs, the amount of information in the 1982 sugar manual was reduced and the reduced subject-matter content has been continued in the manual for 1983. Some descriptive information provided prior to 1982 has been omitted as have tables on sugar production on other sugar-growing areas, import and export data, and information on the use of sugar and other sweeteners.

Readers who need information not included in this manual are referred to the Sugar and Sweetener Report, "Outlook and Situation," published quarterly by the Economic Research Service of the U.S. Department of Agriculture, to Foreign Agricultural Circulars published by the USDA, and to the Statistical Bulletins and the Sugar Year Book of the International Sugar Organization.

Should conditions improve in the future, it may be possible to resume distribution of a Hawaiian Sugar Manual that will contain more information than this one.

HAWAIIAN SUGAR PLANTERS' ASSOCIATION

On March 23, 1882, sugar growers in the then Kingdom of Hawaii met and organized the Planters' Labor and Supply Company. This organization evolved into the Hawaiian Sugar Planters' Association, with a change in name and bylaws in 1895. It is clear from the minutes of the meetings that the members intended the Hawaiian Sugar Planters' Association to be a successor organization with no break in the objectives, membership, etc., from the Planters' Labor and Supply Company.

Thus, the HSPA observed its centennial in 1982.

The Association is a voluntary, non-profit, incorporated association organized for the maintenance, advancement, improvement and protection of the sugar industry in Hawaii and the support of an experiment station. Companies engaged primarily in the business of growing sugarcane and manufacturing sugar from it are plantation members of the Association; individuals who are directly connected with the direction, management, or operation of the sugar companies are individual members.
The Association compiles information, answers inquiries, and coordinates the activities on problems of common interest and concern to its members. In addition to the Association's staff, many of these functions are carried out through standing committees, which are: Accounting, Energy, Environmental Standards, Experiment Station Advisory, Industrial Relations, Insurance, Land and Water, Legal Advisory, Legislative, Public Relations, Raw Sugar Technical, and Tax.

The Association maintains an office in Washington, D. C., where a vice president represents the member companies' interests in federal legislative actions and in the actions of federal administrative and regulatory agencies.

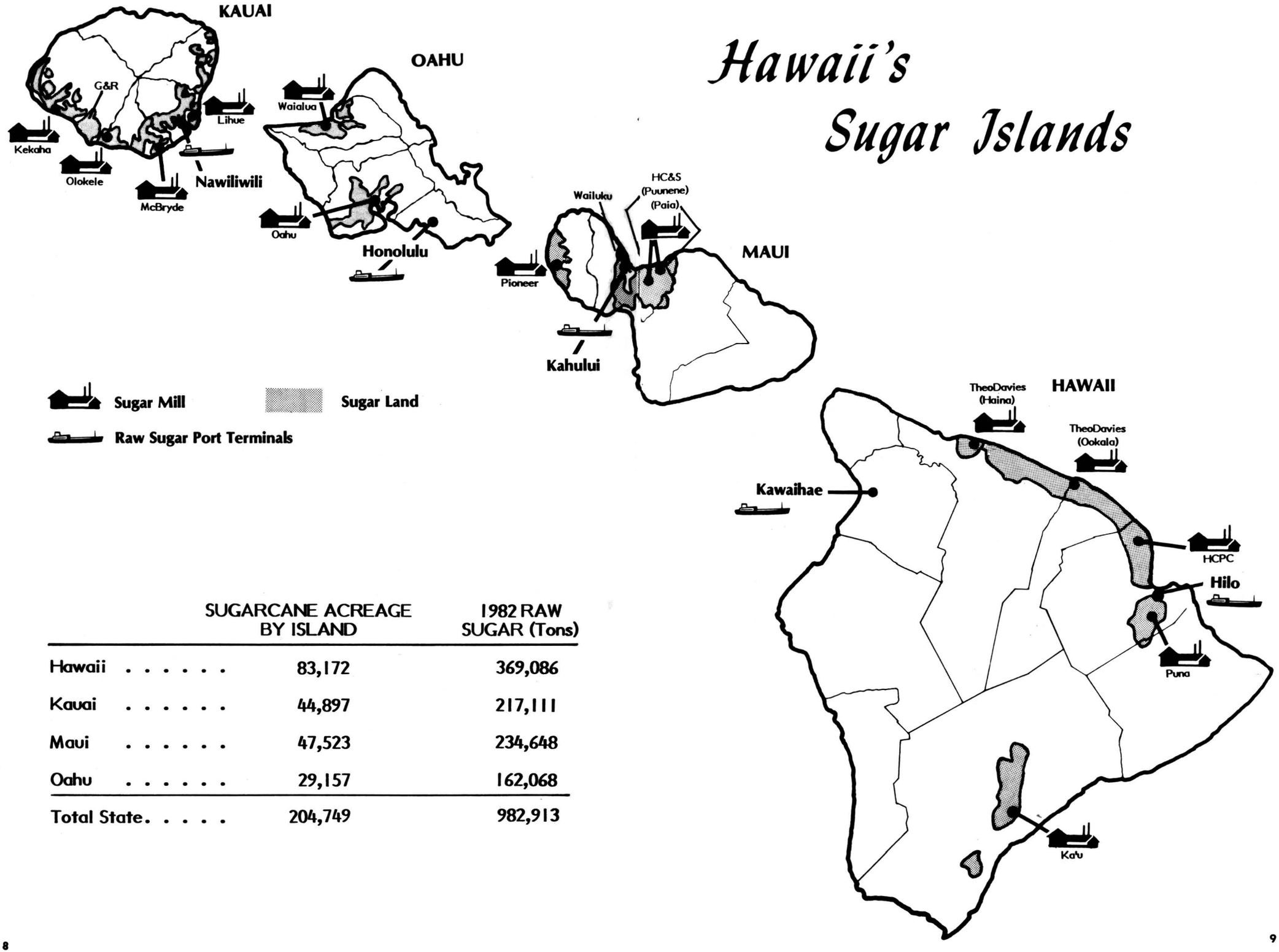
Experiment Station

The Association's single largest program is its Experiment Station. It conducts research on sugarcane for the benefit of all sugarcane growers and processors in Hawaii. The Experiment Station was established by the Association in 1897 and has made consistent and substantial improvements in methods of growing and processing sugarcane.

The largest, single program in the Experiment Station is the development of new sugarcane varieties and the Station has been a world leader in developing improved methods of breeding sugarcane. The Station has also developed methods for the control of insects, diseases, weeds and rats. It has improved sugarcane factory processes and methods of factory process control, and its work has resulted in improved sugar recovery and in improvements on raw sugar quality. Although its research is directed at practical problems in growing and milling sugarcane, it does some research on the basic physiology and biochemistry of the sugarcane plant, when such information is not available from other sources.

The Experiment Station provides services to its member companies, such as routine analyses of raw sugar and molasses; plant and soil analyses to determine fertilizer needs; repair and calibration of sugar factory instruments; field, factory, and factory laboratory audits; and short

Hawaii's Sugar Islands



	SUGARCANE ACREAGE BY ISLAND	1982 RAW SUGAR (Tons)
Hawaii	83,172	369,086
Kauai	44,897	217,111
Maui	47,523	234,648
Oahu	29,157	162,068
Total State.	204,749	982,913

courses to train employees of member companies.

In addition to its headquarters offices and laboratories in Aiea on Oahu, the Experiment Station has substations on each of the four islands on which sugarcane is grown -- Oahu, Maui, Kauai, and Hawaii. One of its principal substations on the Island of Oahu is specifically for the purpose of maintaining parent varieties and for crossing them to develop improved varieties. The Experiment Station also has a large and complete library, with a collection of reference books and periodicals on sugarcane growing and milling, as well as a comprehensive collection of journals and reference books on agriculture, chemistry, and engineering.

CALIFORNIA AND HAWAIIAN SUGAR COMPANY

The California and Hawaiian Sugar Company is an agricultural cooperative marketing association, owned by its 14 member sugar-producing companies in Hawaii. Best known by its brand name, C and H, this company has refineries at Crockett, California, and Aiea, Hawaii. It markets all raw sugar and molasses produced in Hawaii and, except for some raw sugar which is sold to other refiners, refines, packages, and markets as refined sugar the output of Hawaii's sugar factories. In addition to serving as the refining and marketing agency for the sugar companies, it also serves the 265 independent sugarcane farmers in Hawaii.

C and H brand sugar is sold primarily in the western part of the United States from the Pacific Coast to Mississippi River Valley plus Hawaii and Alaska. C and H brand sugar is the nation's leading brand.

Over the past decade, annual C and H sales have averaged about $500 million and have returned an average of about $360 million annually to Hawaii's producers. The company employs approximately 1,400 persons in mainland operations and has about 65 employees at the Aiea refinery. Payroll totals almost $35 million annually.

John B. Bunker is president and chief executive officer of C and H. Company headquarters are at One California Street, San Francisco, CA 94111.

WAGES, HOURS & WORKING CONDITIONS

Hawaii's sugar workers, both field and factory, are members of the International Longshoremen's and Warehousemen's Union (ILWU). A new contract was negotiated with the ILWU, running from February 1, 1983 through January 31, 1985. Under this contract, the minimum pay (Grade 1) is currently $6.70 per hour increasing to $7.00/hr Feb. 1, 1984. The rate for Grade 11 is $9.49 per hour, increasing to $9.79/hr Feb. 1, 1984.

Unlike some farming areas where crops are seasonal, Hawaii's sugar industry provides year-round, long-term employment.

In 1982 the payroll for all Hawaii's sugar workers amounted to $140,005,470.

Daily Average Earnings in 1982

Wages	$ 65.11
Employee Benefits	30.83
Total	$ 95.94

Employee Benefits

Year-round employees receive up to four weeks vacation with pay, 10 paid holidays a year; paid sick leave for up to 54 days plus a temporary disability supplement for extended illness, a medical plan, a family dental care plan, retirement pensions, severance pay, and many other benefits.

Approximate Employment by Occupation at Sugar Companies

Factory	935
Field	1900
Motive Equipment	2285
Construction & Surveying	175
Clerical	265
Trades	1225
Miscellaneous	300
Supervisors	1065
Total	8150

AVERAGE RAW SUGAR PRICE, AVERAGE DAILY EARNINGS FOR NON-SUPERVISORY EMPLOYEES, AVERAGE NUMBER OF ADULT HOURLY-RATED EMPLOYEES, AND TOTAL MAN-DAYS ALL HOURLY-RATED EMPLOYEES ON HAWAIIAN SUGAR PLANTATIONS

	Average New York Raw Sugar price, cents per pound (Hawaiian Basis)[a]	Average Daily Earnings[b]	Adult Hourly-Rated Employees[c]	Total Man-Days Hourly-Rated Employees
1940	2.78	$ 2.18	35,062	9,994,863
1941	3.39	2.48	30,646	8,870,704
1942	3.74	2.90	26,371	7,923,641
1943	3.74	3.59	23,847	7,562,690
1944	3.74	3.91	22,543	7,062,227
1945	3.75	5.10	20,806	6,350,489
1946	4.59	5.28	22,131[d]	5,247,294[d]
1947	6.22	7.63	22,743	6,443,424
1948	5.56	8.02	21,381	5,820,806
1949	5.81	8.04	20,258	5,437,839
1950	5.93	8.30	19,340	5,069,682
1951	6.06	9.00	18,654	4,894,004
1952	6.26	9.70	18,193	4,653,898
1953	6.29	10.20	17,589	4,386,554
1954	6.09	10.58	16,773	4,163,264
1955	5.95	10.62	15,935	3,896,761
1956	6.09	10.73	15,065	3,646,860
1957	6.25	11.20	14,085	3,457,428
1958	6.27	12.78	13,304[e]	2,333,527[e]
1959	6.24	12.84	12,755	3,082,207
1960	6.31	13.18	12,111	2,917,459
1961	6.30	14.11	11,660	2,787,714
1962	6.45	14.96	10,960	2,675,974
1963	8.20	16.68	10,722	2,582,706
1964	6.90	17.60	10,516	2,593,094
1965	6.75	18.40	10,346	2,505,839
1966	6.99	19.76	10,040	2,447,554
1967	7.28	21.35	9,756	2,346,197
1968	7.52	21.62	9,481	2,282,654
1969	7.75	23.26	9,213[f]	2,066,244[f]
1970	8.08	24.24	8,908	2,139,183
1971	8.52	26.08	8,610	2,077,011
1972	9.10	29.09	8,127	1,934,563
1973	10.30	30.86	7,900	1,897,369
1974	29.43	34.41	7,700[g]	1,744,346[g]
1975	22.49	37.34	7,800	1,937,973
1976	13.31	43.12	7,500	1,854,272
1977	11.11[i]	43.92	7,200[h]	1,660,298[h]
1978	13.74	47.06	7,200	1,771,530
1979	15.20[j]	50.49	7,065	1,762,838
1980	30.18	56.72	7,076	1,793,237
1981	19.74	61.51	7,282	1,806,020
1982	19.94	65.11	6,816	1,519,732

[a] Hawaiian basis is the average New York raw sugar price computed over all the days in the year. The New York price is computed for days the New York market is operating. Local sugar land leases are based on the Hawaiian basis rather than the New York basis.

[b] Cash wage only. Does not include "employee benefits."

[c] Prior to 1947 included only male adults.

[d] 1946: industry-wide strike, 2 1/2 months.

[e] 1958: industry-wide strike, 4 months.

[f] 1969: industry-wide strike, 5 weeks.

[g] 1974: industry-wide strike, 6 weeks.

[h] 1977: industry-wide strike, 3 weeks.

[i] New York spot price discontinued Nov. 2, 1977; after that date based on Clearing Association settlement prices.

[j] N. Y. spot price reinstituted on Aug. 20, 1979.

U. S. SUGAR SUPPLY AND USE

The sweetener requirements of the United States are met from several sources. Twenty states produce sugar from sugarcane or sugar beets and there are at least 11 states that produce sweeteners from corn.

In 1982 the U.S. produced about 63% of its sweetener requirements, the balance being made up by imports from other countries of raw sugar which was refined in the U.S.

Of the approximately 5.62 million tons of sugar produced in the U.S. during 1982-83, approximately 2.74 million tons were from beets and 2.88 million tons from sugarcane.

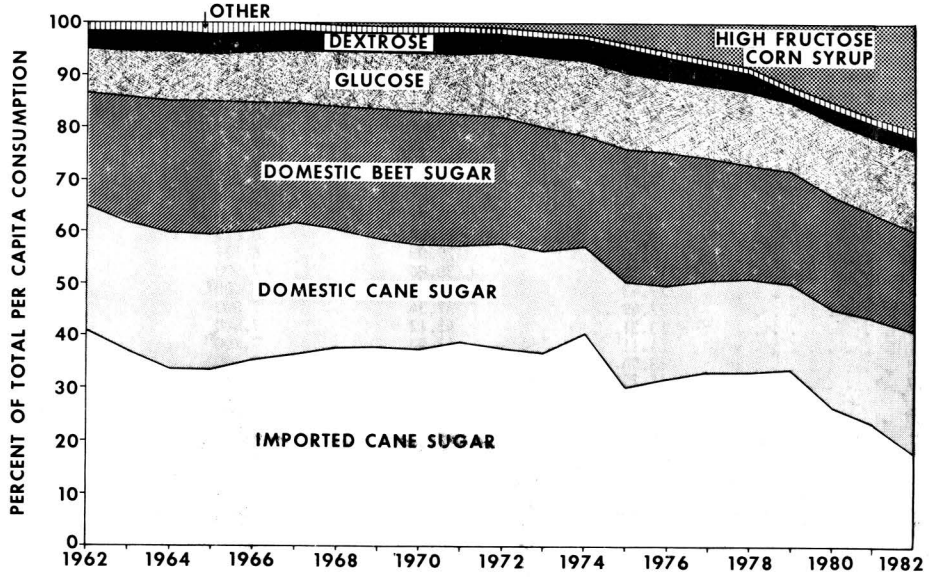
A total of 5.6 million tons of corn sweeteners were used for food in the U.S. in 1982, of which 3.1 million tons (21 percent of total per capita sweetener consumption) were High Fructose Corn Syrup (HFCS). (See the graph at the bottom of this page.)

During 1982, 2.6 million tons of sugar was imported into the U.S., compared to 5.01 million tons in 1981, 4.48 million tons in 1980 and 5.03 million tons in 1979. (See table on page 13.)

Total disappearance of sugar for domestic use in 1982 was 9,342,000 tons and an additional 65,000 tons were exported.

Of the sugar used in the United States, approximately 5.57 million tons was used in products such as soft drinks, baked goods, and dairy products. Most of the balance was used at home and in meals served in restaurants and institutions.

Per capita sugar consumption in the United States has decreased from approximately 100 pounds, which prevailed for many years, to 75.3 pounds in 1982. This does not reflect a decrease in total nutritive sweetener consumption, which has remained at about 125 pounds per capita for the past 15 years. The difference between the 75.3 pounds per capita sugar consumption and the total is made up mainly of corn sweeteners, including HFCS, glucose, and dextrose. (See table on page 14.)



UNITED STATES PER CAPITA CALORIC SWEETENERS CONSUMPTION
(Sources as per cent of total, 1964-82.)

Based on data from USDA Sugar and Sweetener Report, 8(2), June 1983.

TOTAL FOREIGN IMPORTS INTO U.S.A. (Mainland) BY COUNTRIES OF ORIGIN: 1979 THROUGH 1982

Country	Calendar year 1979	1980	1981	1982
		1,000 short tons, raw value[a]		
WESTERN HEMISPHERE:				
Caribbean Islands:				
Dominican Republic	817	615	761	363
Haiti	11	10	--	--
West Indies	212	214	30	55
Other	--	--	--	--
Total[b]	1,040	839	791	418
Central America:				
Belize (British Honduras)	58	72	56	48
Costa Rica	80	68	82	57
El Salvador	161	41	46	68
Guatemala	171	219	224	61
Honduras	65	89	95	74
Nicaragua	122	63	80	51
Panama	157	156	104	93
Other	--	11	--	--
Total[b]	814	719	687	452
North America:				
Canada	90	1	3	35
Mexico	60	(c)	(c)	(c)
Total[b]	150	1	3	35
South America:				
Argentina	235	197	444	171
Bolivia	89	73	8	36
Brazil	1,262	846	1,099	273
Colombia	26	214	166	36
Ecuador	82	73	55	26
Peru	189	52	--	76
Other	--	7	146	52
Total[b]	1,883	1,462	1,863	670
Total Western Hemisphere[b]	3,887	3,021	3,344	1,575
EASTERN HEMISPHERE:				
Australia	108	351	715	169
China, Republic of	28	--	(c)	62
Fiji Islands	130	50	24	19
France	--	--	(c)	(c)
Germany, West	(c)	(c)	--	(c)
India	(c)	(c)	(c)	(c)
Malagasy, Republic of	10	20	12	--
Malawi	36	60	88	28
Mauritius	116	55	--	19
Mozambique	98	88	40	22
South Africa	89	164	--	36
Swaziland	102	142	192	82
Thailand	9	66	262	322
Zimbabwe	--	--	92	102
Other	(c)	57	98	--
Total Eastern Hemisphere excluding Philippines[b]	726	1,053	1,431	861
Philippines	413	409	239	203
Total Eastern Hemisphere[b]	1,139	1,462	1,670	1,064
TOTAL U.S. IMPORTS[b]	5,027	4,484	5,014	2,639

[a] USDA data are reported by refiners for sugar certified and adjusted to a 96° polarity and actually received by refiners.

[b] May not add due to rounding.

[c] Less than 0.5.

Source: U.S. Dept of Agriculture Sugar and Sweetener: Outlook & Situation, Vol. 8 (1) March 1983.

CONTINENTAL U. S. SUGAR CONSUMPTION

Five Year Intervals—1873-1943

Year	Total Sugar Consumption[a] (Short tons, raw value)	Per Capita Consumption (Pounds, refined value)
1873	897,072	40.2
1878	926,929	36.4
1883	1,402,577	48.8
1888	1,746,385	54.4
1893	2,283,985	63.8
1898	2,400,278	61.1
1903	3,055,492	70.5
1908	3,817,849	80.1
1913	4,485,778	86.9
1918	4,189,134	75.6
1923	5,729,172	96.0
1928	6,658,400	103.8
1933	6,613,200	99.7
1938	6,597,200	96.3
1943	6,725,720	94.2

Yearly Intervals—1944-1982

Year	Total Sugar Consumption[a] (Short tons, raw value)	Per Capita Consumption (Pounds, refined value)
1944	6,170,000	89.5
1945	5,046,000	73.9
1946	5,552,000	75.1
1947	7,357,000	95.5
1948	7,263,000	94.0
1949	7,451,000	95.8
1950	8,217,000	100.8
1951	7,552,000	93.8
1952	8,008,000	98.2
1953	8,354,000	97.9
1954	8,106,000	96.3
1955	8,350,000	97.5
1956	8,962,000	98.4
1957	8,708,000	95.0
1958	9,017,000	96.8
1959	9,135,000	96.4
1960	9,434,000	97.6
1961	9,612,000	97.7
1962	9,709,000	97.2
1963	9,856,000	97.3
1964	9,938,000	96.8
1965	10,080,000	97.0
1966	10,235,000	97.3
1967	10,474,000	98.5
1968	10,656,000	99.2
1969	10,950,000	101.0
1970	11,163,000	101.8
1971	11,345,000	102.4
1972	11,487,000	102.8
1973	11,429,000	101.5
1974	10,946,000	96.6
1975	9,304,000	90.2
1976	10,895,000	94.7
1977	11,100,000	95.7
1978	10,889,000	93.1
1979	10,761,000	91.1
1980	10,189,000	83.6
1981[b]	9,770,000	79.5
1982[b]	9,240,000	75.2

[a] Theoretical consumption. (Actual deliveries for consumption, and includes deliveries for U.S. military forces at home and abroad.)

[b] Estimated.

Source: 1873-1943--Lamborn Sugar Market Reports.
1944-1977--U.S. Dept. of Agriculture Agricultural Statistics, 1958, 1968, 1978.
1978-1979--U.S. Dept. of Agriculture Sugar and Sweetener Report, Vol. 6 (1), Feb. 1981.
1980-1982--U.S. Dept. of Agriculture Sugar and Sweetener Report, Vol. 8 (2), June 1983.

SUGAR PRICES

During the life of the U.S. Sugar Act, sugar prices remained remarkably stable (see table on page 11 and graphs on pages 6 and 15).

After Congress terminated the Sugar Act in 1974, and under the influence of worldwide market conditions, sugar prices increased dramatically in 1974. They decreased almost as rapidly in 1975 and were relatively stable until 1979 and 1980, when a new peak was reached.

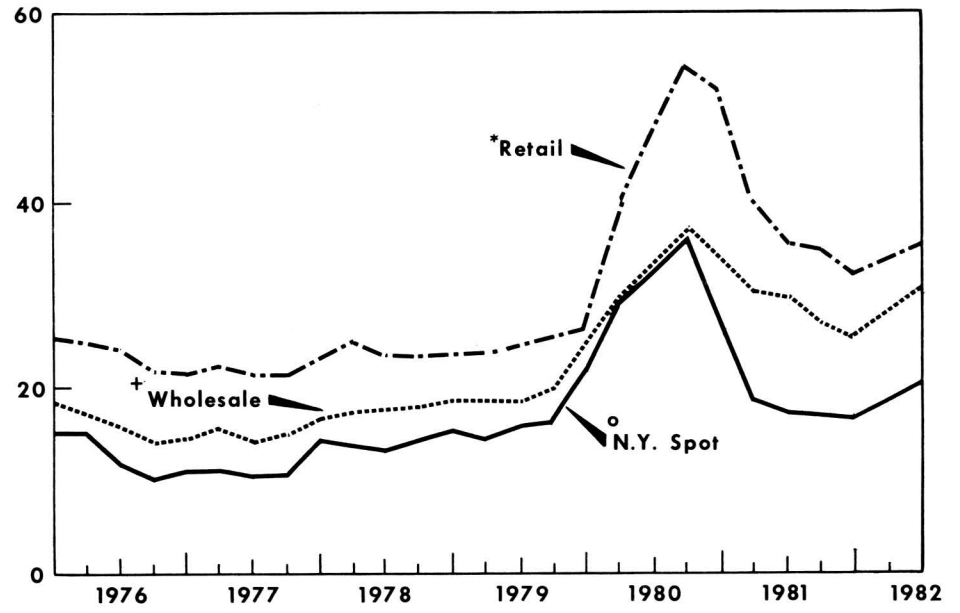
One of the most generally used indicators of U.S. raw sugar prices is the "New York Spot Price." The graphs on pages 6 and 15 show the relationship of this price to the wholesale and retail prices of sugar and show its relationship to returns to Hawaiian producers and to their cost of production.

WORLD SUGAR

The world sugar situation is currently one of over-production and large stocks. Total production in 1982-83 is estimated to be 99 million metric tons raw value, while consumption is estimated at 90 million tons. This will add to already large carryover stocks. Most sugar is used in the country where it is produced or is exported to other countries under long-term contracts. Sugar not so committed is sold on what is called the "world market" for whatever price can be obtained. Temporarily high prices in this market are invariably followed by periods of low prices. In October 1980 the world price for raw sugar was 40.5 cents per pound but by June 1983 was only 10.9 cents. Current world prices are below cost of production even for countries with the lowest costs.

The United States was without an effective sugar program from 1974 until early 1982. During that period the U.S. price to domestic producers was essentially the world price, which fell well below cost of production. In late 1981 Congress included a sugar price support program in the Agriculture and Food Act of 1981 and in May 1982 the President established country-by-country quotas on imports. These actions resulted in improved prices to U.S. producers, giving them the same kind of insulation against the volatile world price that producers in other countries have.

U.S. SUGAR PRICES
¢ per lb.



* Granulated.

° Bulk raw sugar. For 4th quarter 1977 through 3rd quarter 1979, derived from London daily price, Caribbean basis, plus applicable fees and freight.

+ Bulk, dry beet sugar, F.O.B. plant in Colorado.

Source: 1972-77: Adapted from Fig. S-6, USDA Sugar and Sweetener Report, Vol. 3 pg. 17, February 1978.
1978: Adapted from Fig. S-5, USDA Sugar and Sweetener Report, Vol 4, pg. 20, May 1979.
1980: Adapted from "U.S. Sugar Prices" figure, USDA Sugar and Sweetener Report, Vol. 6(2), pg. 10, May 1981.
1981: Adapted from "U.S. Sugar Prices" figure, USDA Sugar and Sweetener Report, Vol. 7(1), pg. 7, February 1982.
1982: Adapted from "U.S. Sugar Prices" figure, USDA Sugar and Sweetener Report, Vol. 8(1), pg. 5, March 1983.

MISCELLANEOUS

Glossary

BAGASSE: Fibrous residue remaining after sugarcane has been milled to extract the sugar-containing juices.

BLACKSTRAP MOLASSES: The final product remaining after all the commercially recoverable sucrose has been removed from the juices expressed from cane. It is a dark colored, heavy, viscous liquid.

BRIX: The measure of density of a solution containing sucrose as determined by a hydrometer.

CALORIE: Unit expressing the energy-producing value of food. A pound of sugar contains 1,790 calories. A standard teaspoon contains 18.

DEXTROSE: A widely occurring crystallizable, simple sugar which contains 6 carbon atoms in contrast to the 12 found in sucrose. It is obtained in commercial quantities by the action of acid on cornstarch. It is less sweet than sucrose.

FRUCTOSE: An alternate chemical name for levulose.

GLUCOSE: (1) An alternate chemical name for dextrose. (2) A name given to corn syrups which are obtained by the action of acids and/or enzymes on cornstarch. Commercial corn syrups are nearly colorless and very viscous. They consist principally of dextrose and another sugar, maltose, combined with gummy organic materials known as dextrins, in water solution.

GUR: Cane juice, concentrated nearly to dryness by boiling over an open fire, without centrifuging and with no purification other than by skimming. This ancient process is still used for producing a large share of the sugar consumed in India and some other countries. The crude product is high in glucose and correspondingly low in sucrose.

HIGH FRUCTOSE CORN SYRUP: High fructose corn syrups (HFCS) are produced by the enzymatic conversion of a portion of the glucose in corn syrup to fructose. Composition of presently available products ranges from 7 to 55% glucose and 42 to 90% fructose on dry solids, the balance being other saccharides. Dry solids average about 71% on total weight. The product is roughly comparable to invert syrup made from sucrose in terms of sweetness and physical properties.

HIGH TEST MOLASSES: A concentrated, clarified cane juice which has been inverted (usually about 2/3) to prevent sucrose from crystallizing at the high concentrations normally employed.

INVERT OR INVERT SUGAR: The mixture of equal parts of dextrose and levulose produced by the action of acid or enzymes on solutions of sucrose.

LEVULOSE: A highly soluble, simple sugar, also containing 6 carbon atoms, it is crystallized with great difficulty, is generally considered sweeter than sucrose, and is present in considerable quantities in combination with dextrose and sucrose in invert sugars.

LIQUID SUGAR: A concentrated solution of refined sucrose or of a mixture of sucrose and invert sugar.

MASSECUITE: A dense mass of sugar crystals mixed with mother liquor, obtained by evaporation.

MOLASSES: The mother liquor separated from sugar crystals in massecuite.

NON-CENTRIFUGAL SUGARS: Crude sugars made from the sugarcane juice by evaporation and draining off the molasses. Among local names are "muscovado," "panocha," and "papelon."

PLANT CROP: The sugarcane crop started with seed pieces (setts).

POLARIZATION: The value (designated as "pol") determined by direct or single polarization of a normal weight solution in a saccharimeter or polariscope. (Based on Spencer and Meade.)

RATOON: Second and subsequent crops grown from the root systems of previous plantings of sugarcane. Usually one or more ratoon crops are harvested before the fields are plowed and replanted.

RAW SUGAR: The impure centrifugal sugar of commerce, a light brown crystalline material, generally containing between 96 and 99% sucrose, plus various impurities and moisture. Other names are "panocha" and "demerara."

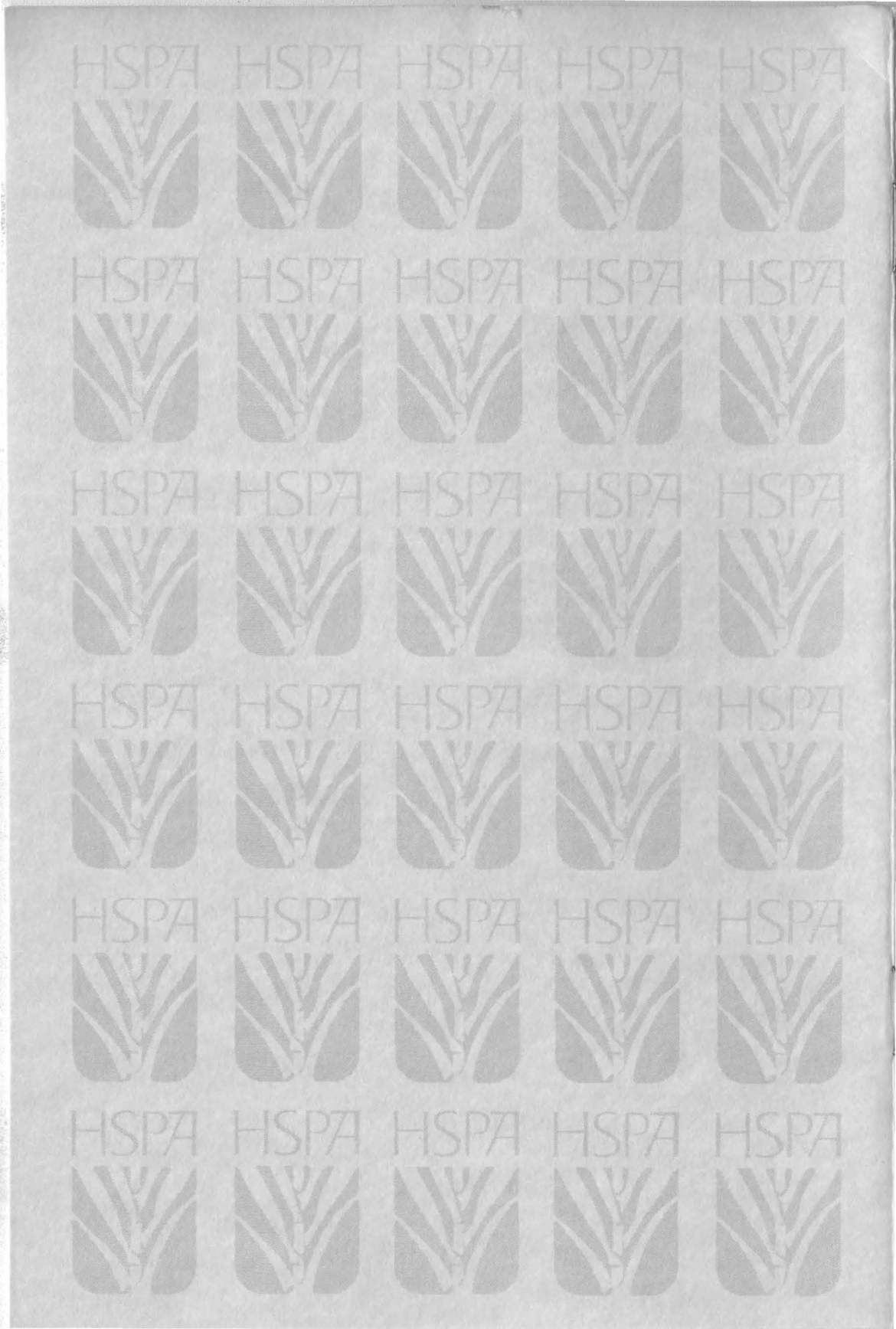
SOFT SUGARS: Highly refined, dark-colored, molasses-flavored sugars which are frequently called brown sugars. They contain significant amounts of non-sucrose.

SUCROSE: A sweet crystallizable, colorless sugar which constitutes the principal sugar of commerce. Refined cane and beet sugars are essentially 100% sucrose. Under certain conditions sucrose breaks down to dextrose and levulose.

SYRUP: Concentrated clarified cane juice before crystallization.

TEL QUEL: Literally, such as (it is). When used describing sugar it means "as made," hence of a polarization usually varying among mills and producing areas.

TURBINADO: Direct consumption raw sugar of high polarization which must be dried in a granulator to a very low moisture content.


HSPA